PacDrive 3 automation solutions
Safety Modicon TM5 & TM7: safety logic controllers and safety I/O modules

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Contents

PacDrive 3 automation solutions
Safety Modicon TM5 & TM7 : Safety logic controllers and safety I/O modules

- General presentation
  - Maximize your business and machine performance ........................................ Page 2
  - Increase your profitability ................................................................. Page 3
  - Architecture (TVDA) ................................................................. Page 4
  - Reduce your time to market ............................................................. Page 5

- Modicon TM5CSLC safety logic controller
  - Presentation ................................................................................... Page 6
  - Safety characteristics .................................................................. Page 6
  - Certification ................................................................................. Page 7
  - References .................................................................................... Page 7

- Modicon TM5 and Modicon TM7 Safety I/O expansion modules
  - Presentation ................................................................................... Page 8
  - References .................................................................................... Page 9

- SoSafe Programmable programming software
  - Presentation ................................................................................... Page 10
  - References .................................................................................... Page 11
  - Application function blocks .......................................................... Page 12

- Recommended offers
  - Modicon TM5 interface module for Sercos ........................................ Page 13
  - Phaseo Power supply ...................................................................... Page 13
  - Prevena modular safety controller Type XPSMCM ................................ Page 13

- Product reference index ...................................................................... Page 14
General presentation

PacDrive 3 automation solutions
Safety Modicon TM5 & TM7
Safety logic controllers and safety I/O modules

Maximize your business and machine performance with MachineStruxure

Machine builders are constantly looking for new ways to design and build more innovative machines in less time and at lower cost. MachineStruxure™ can help.

MachineStruxure is a complete machine automation solution that provides flexible and scalable machine control, ready-to-use architectures, efficient engineering solutions, and comprehensive customization and engineering support services. It can help meet your challenges for improved efficiency and greater productivity, allowing you to deliver higher added value to your customers throughout the entire machine life cycle.

Improve efficiency

Flexible and scalable safety

Selecting the right safety offer for your application

Selecting the appropriate safety management system for your application is dependent on size of the application, scalability and flexibility of the architecture, diagnostic requirements and software needs.

Typically:
> Safety modules (Preventa XPS) are used to manage stop operations for small machines with a limited number of safety functions.
> Modular safety controllers (Preventa XPSMCM) are used for speed monitoring applications as well as for distributed architectures with up to 128 inputs and 16 outputs.
> Embedded safety PLCs (Modicon TM5CSLC) are used for large distributed architectures with significant diagnostic needs and software flexibility.

More information can be found regarding other safety offers:
> Within the “Machine Safety Solutions” library
> On our website: www.schneider-electric.com/Machine safety solutions
General presentation

PacDrive 3 automation solutions
Safety Modicon TM5 & TM7
Safety logic controllers and safety I/O modules

Increase your profitability

> Find the exact match for your specifications
> Optimize your configuration
> Save space in the cabinet by using fewer components

Overview
The Embedded safety PLC offer for PacDrive 3 is suitable for safety applications requiring distributed safety connected to physical input/output devices over a Sercos common network and certified EN ISO 13849-1 PL e Category 4, and EN/IEC 62061 SIL3.

Architecture
The PacDrive 3 architecture comprises a Master controller which is the PacDrive Motion controller (LMC). The Modicon TM5CSLC safety logic controller can be added to this architecture to manage the safety-related parts of the architecture over the Sercos network. The Sercos network can be created as a line, tree or ring topology.

> Input/outputs are connected to the Sercos network via a Modicon TM5 Sercos Interface module. The Ethernet cable between each Sercos interface module can be extended up to 100 meters (328.08 ft.).

> Within an architecture, by using the TM5CSLC100FS safety logic controller, it is possible to manage a group of 20 safety nodes consisting of I/O islands (bus couplers), Lexium 62 safety servo drives (1) or a Lexium 62 ILM integrated drive with safety optional module (2). By using the TM5CSLC200FS safety logic controller it is possible to manage a group of up to 50 safety nodes consisting of I/O islands (bus couplers), Lexium 62 safety servo drives (1), or a Lexium 62 ILM integrated drive with optional safety module (2).

> The Modicon TM5 Sercos interface module (bus coupler) can manage up to 50 Modicon TM5/Modicon TM7 safety and non-safety I/O modules.

Programming
The safety system is programmed using SoSafe programmable software. On installation of SoSafe programmable, the software editor is embedded in the SoMachine Motion programming environment. Each hardware component is defined within the SoMachine Motion environment, such as the PLC, the Modicon TM5 Modicon TM7 safety I/O modules, the Lexium 62 safety servo drives, and the Lexium 62 ILM integrated drive with optional safety module. The application program and configuration of the safety hardware are managed within the SoSafe programmable editor.

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(1) Please refer to our catalog “PacDrive 3 automation solution, Lexium 62 multi-axis drive system” ref. DIA7ED2160305EN.
(2) Please refer to our catalog “PacDrive 3 automation solution, Lexium 62 ILM integrated drive” ref. DIA7ED2160306EN.
PacDrive 3 automation solutions
Safety Modicon TM5 & TM7
Safety logic controllers and safety I/O modules

Solution Breakdown
1. Compact NSX Circuit breaker
2. IEM32 Energy meter
3. Phaseo Switch mode power supply
4. ConneXium Ethernet switch
5. PacDrive LMC216 Motion controller
6. Modicon TM5CSLC Safety logic controller
8. Harmony XALK Emergency stop
9. Magelis HMI Small Panels
10. Harmony XV Signaling units
11. Lexium 52 Single axis servo drive
14. Telemecanique Sensors*: Proximity sensors, Photoelectric sensors, Limit switches, Pressure switches and Encoders
15. Harmony XB4/XB5 Control units, Harmony XB5S Biometric switches
16. 3rd party product: encoder
17. Lexium SH/MH Servo motors series
General presentation

PacDrive 3 automation solutions
Safety Modicon TM5 & TM7
Safety logic controllers and safety I/O modules

Reduce your time to market

SoSafe programmable™ programming software

Easy automation with SoSafe Programmable: intuitive programming software

Configuration

> Define hardware module configuration
> Create project configuration using drag-and-drop to position function blocks and assign inputs and outputs.

Online simulation & testing

> Validate software configuration
> View configuration behavior through online simulation in graphic or text views.

Commissioning

> Use project documentation to support wiring and safety calculations and complete the commissioning process.
Modicon TM5CSLC safety logic controllers comprise a Sercos slave interface, supplied with a 24 VDC power supply, equipped with two embedded shielded RJ45 ports for connection to the Sercos bus (rate: 100 Mbps), and a memory stick interface.

- Modicon TM5CSLC safety logic controllers are programmed with SoSafe programmable software using IEC 61131-3 programming languages: Ladder Diagram (LD), Function Block Diagram (FBD), and Structured Text (ST).
- Modicon TM5CSLC safety logic controllers manage the safety-related application and provide the following functionality:
  - configuration management
  - parameter management
  - secure execution of the application program
- The safety I/O modules (Modicon TM5 and Modicon TM7) are connected to the Modicon TM5CSLC safety logic controller by means of the Modicon TM5 Sercos interface module. For more information, please refer to our catalog “Modicon TM5 Expansion modules” ref. DIA3ED2131204EN.

### Safety characteristics for Modicon TM5CSLC safety logic controllers

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Characteristic value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category according to EN ISO 13849</td>
<td>Cat 4</td>
</tr>
<tr>
<td>Maximum performance level according to EN ISO 13849</td>
<td>PL e</td>
</tr>
<tr>
<td>Maximum safety integrity level according to IEC 62061</td>
<td>SIL 3</td>
</tr>
<tr>
<td>Maximum safety integrity level according to IEC 61508</td>
<td>SIL 3</td>
</tr>
<tr>
<td>PFH</td>
<td>&lt; 1 \times 10^{-10}</td>
</tr>
</tbody>
</table>
| PFD                                                | □ < 1 \times 10^{-3} at a proof test interval of 10 years
|                                                     | □ < 2 \times 10^{-3} at a proof test interval of 20 years|
| PT                                                 | Max. 20 years                                           |
| SFF                                                | > 90%                                                    |
| Life                                               | Max. 20 years                                           |
| DC                                                 | > 90%                                                    |
| MTTFd                                              | > 2500 years                                            |
Certification, references

PacDrive 3 automation solutions
Safety Modicon TM5 & TM7
Safety logic controllers and safety I/O modules

Certification
The Modicon TM5 embedded safety offer is certified by TÜV Nord Group up to performance level e according to EN ISO 13849-1, and SIL cl 3 according to IEC 61508 and IEC 62061. These certifications are listed below:

- IEC 61511: 2003 Functional safety
- IEC 61131-2: Programmable controllers part 2: Equipment requirements and tests
- EN ISO 13849-1: 2008 Safety of machinery: Safety-related parts of control systems – Part 1: General principles for design, PL e Category 4
- EN 60204-1: 2006 Safety of machinery. Electrical equipment of machines. General requirements
- EN 50178: 1997 Electronic equipment for use in power installations
- NFPA-79: Electrical Standard for Industrial Machinery

References

<table>
<thead>
<tr>
<th>Designation</th>
<th>Description</th>
<th>Reference</th>
<th>Weight kg/lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety logic controllers</td>
<td>20 safety nodes</td>
<td>TM5CSLC100FS</td>
<td>0.290/0.64</td>
</tr>
<tr>
<td>Safety logic controllers</td>
<td>100 safety nodes</td>
<td>TM5CSLC200FS</td>
<td>0.290/0.64</td>
</tr>
</tbody>
</table>

Accessory for Modicon TM5CSLC safety logic controller

TM5 safety system memory stick
Each safety logic controller requires a memory stick in order to operate. The memory stick is required to save the program, the parameters, and the system configuration. The memory stick is designed with a mechanical locking mechanism to prevent unintended removal.

<table>
<thead>
<tr>
<th>Designation</th>
<th>Description</th>
<th>Reference</th>
<th>Weight kg/lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memory stick</td>
<td>8 MB</td>
<td>TM5ACSLCM8FS</td>
<td>0.003/0.007</td>
</tr>
</tbody>
</table>
Safety I/O expansion modules

Each safety I/O expansion module consists of three parts, to be ordered separately:

- A safety I/O electronic module
- A bus base, with a mechanical locking lever for mounting/dismounting on a symmetrical rail. On each side of the base, there is a bus expansion connection for the link with the previous controller or module
- A removable spring terminal block with locking lever and slots for colored identifiers.

The range of safety digital I/O expansion modules consists of:

- safety digital input modules
- safety analog and temperature input modules
- safety digital output modules
- safety digital input/output modules
- safety counter input module

Modicon TM7 safety I/O expansion modules (IP67)

Modicon TM7 safety I/O expansion modules are IP67 I/O dedicated to safety-related applications.

Two module versions are available:

- 8 safety digital (sink) inputs, 2 non-safety digital inputs, 2 non-safety digital outputs
- 8 safety digital (sink) inputs and 4 safety digital outputs

Modicon TM7 safety I/O expansion modules use two power buses and a data bus to perform its functions. These buses are organized as follows:

- TM7 bus: this bus includes one data bus and one power bus, as follows:
  - The TM7 power bus distributes power to supply the electronics of the TM7 Safety I/O modules. This bus receives its power from a Modicon TMSSBET7 transmitter module.
  - The TM7 data bus passes data between the Sercos bus interface and the TM7 expansion modules.
- 24 VDC I/O power segment: it distributes power to the inputs, outputs and the connected sensors and actuators of the TM7 safety system I/O blocks. Each of the Modicon TM5 and Modicon TM7 safety modules can have multiple 24 VDC I/O power segments, depending on considerations such as power consumption and separation of I/O types.
References

PacDrive 3 automation solutions
Safety Modicon TM5 & TM7
Safety logic controllers and safety I/O modules

Modicon TM5 safety I/O expansion modules (IP20) – references

<table>
<thead>
<tr>
<th>Designation</th>
<th>Description</th>
<th>Reference</th>
<th>Weight kg/lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety I/O electronic modules</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IP20 Safety digital input modules</td>
<td>2 safety digital inputs, 24 VDC, sink</td>
<td>TM5SD2IFS</td>
<td>0.025/0.055</td>
</tr>
<tr>
<td>IP20 Safety digital input modules</td>
<td>4 safety digital inputs, 24 VDC, sink</td>
<td>TM5SD4IFS</td>
<td>0.025/0.055</td>
</tr>
<tr>
<td>IP20 Safety digital input modules</td>
<td>20 safety digital inputs, 24 VDC, sink</td>
<td>TM5SD2IFS</td>
<td>0.059/0.013</td>
</tr>
<tr>
<td>IP20 Safety digital mixed I/O modules</td>
<td>2 safety digital inputs, 24 VDC, sink</td>
<td>TM5SDM2IFS</td>
<td>0.025/0.055</td>
</tr>
<tr>
<td>IP20 Safety digital mixed I/O modules</td>
<td>2 N/O safety relay outputs</td>
<td>TM5SD2IFS</td>
<td>0.025/0.055</td>
</tr>
<tr>
<td>IP20 Safety digital mixed I/O modules</td>
<td>6 safety digital inputs, 24 VDC, sink</td>
<td>TM5SD6IFS</td>
<td>0.066/0.146</td>
</tr>
<tr>
<td>IP20 Safety digital mixed I/O modules</td>
<td>2 digital outputs 24 VDC, 500 mA</td>
<td>TM5SD2IFS</td>
<td>0.025/0.055</td>
</tr>
<tr>
<td>IP20 Safety digital output modules</td>
<td>2 safety digital outputs, 24 VDC, transistor 0.5 A</td>
<td>TM5SDO2IFS</td>
<td>0.025/0.055</td>
</tr>
<tr>
<td>IP20 Safety digital output modules</td>
<td>2 safety digital outputs, 24 VDC, transistor 2 A</td>
<td>TM5SDO2IFS</td>
<td>0.025/0.055</td>
</tr>
<tr>
<td>IP20 Safety digital output modules</td>
<td>4 safety digital outputs, 24 VDC, transistor 0.5 A</td>
<td>TM5SDO4IFS</td>
<td>0.025/0.055</td>
</tr>
<tr>
<td>IP20 Safety digital output modules</td>
<td>4 safety digital outputs, 24 VDC, transistor 2 A</td>
<td>TM5SDO4IFS</td>
<td>0.025/0.055</td>
</tr>
<tr>
<td>IP20 Safety digital output modules</td>
<td>6 safety digital outputs, 24 VDC, transistor 0.2 A</td>
<td>TM5SDO6IFS</td>
<td>0.025/0.055</td>
</tr>
<tr>
<td>IP20 Safety digital output modules</td>
<td>2 N/O safety relay outputs 230 VAC 6 A</td>
<td>TM5SDO2IFS</td>
<td>0.101/0.223</td>
</tr>
<tr>
<td>IP20 Safety analog input modules</td>
<td>4 safety analog inputs 0...20 mA/4...20 mA 24-bit resolution</td>
<td>TM5SA4IFS</td>
<td>0.068/0.150</td>
</tr>
<tr>
<td>IP20 Safety analog input modules</td>
<td>4 safety thermocouple inputs: PT100/PT1000 inputs, 24-bit resolution</td>
<td>TM5ST4IFS</td>
<td>0.066/0.146</td>
</tr>
<tr>
<td>IP20 Safety counter module</td>
<td>1 safety counter input, 24 VDC sink wiring modes A-A, A-A-B-B', Maximum frequency 7 kHz</td>
<td>TM5SDC1IFS</td>
<td>0.052/0.115</td>
</tr>
<tr>
<td>Safety bus base for Safety I/O electronic modules</td>
<td>Internal I/O supply interconnected, 0.13 W power consumption</td>
<td>TM5ACBM3IFS</td>
<td>0.020/0.044</td>
</tr>
<tr>
<td>Safety terminal blocks</td>
<td>For use with TM5SDIppp, TM5SDMppp, TM5SDOppp, and TM5SDC1FS safety-related modules (24 VDC connected, 12-pin spring clamp, 10 A rated current per contact)</td>
<td>TM5ACTB5IFS</td>
<td>0.020/0.044</td>
</tr>
<tr>
<td>IP20 Safety terminal block</td>
<td>For use with PT1000 sensors on TM5ST4ATCFS module (24 VDC, 16-pin spring clamp, 10 A rated current per contact)</td>
<td>TM5ACTB5IFS</td>
<td>0.040/0.088</td>
</tr>
<tr>
<td>IP20 Safety terminal block</td>
<td>For use with analog 4-20 mA inputs on TM5SA4IFS module, and thermocouple inputs without compensation on TM5ST4ATCFS module (24 VDC, 16-pin spring clamp, 10 A rated current per contact)</td>
<td>TM5ACTB5IFS</td>
<td>0.037/0.082</td>
</tr>
<tr>
<td>Safety power distribution module</td>
<td>Power source for specified non-safety-related I/O modules, for use in association with its dedicated, left-isolating TM5ACBM4FS safety bus base. It supports the pre-defined safe power-off state (de-energized) to the I/O modules connected, (24 V DC, 10 A with integrated safe cut-off function)</td>
<td>TM5SPS10IFS</td>
<td>0.090/0.176</td>
</tr>
<tr>
<td>IP20 Safety power distribution module (SPDM)</td>
<td>For use with the Safety power distribution module TM5SPS10IFS (The internal I/O supply is left-isolated)</td>
<td>TM5ACBM4IFS</td>
<td>0.059/0.130</td>
</tr>
</tbody>
</table>

Modicon TM7 safety I/O expansion modules (IP67) – references

<table>
<thead>
<tr>
<th>Designation</th>
<th>Description</th>
<th>Reference</th>
<th>Weight kg/lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP67 Safety input module</td>
<td>8 digital inputs, 24 VDC, sink</td>
<td>TM7SD8IFS</td>
<td>0.217/0.478</td>
</tr>
<tr>
<td>IP67 Safety mixed I/O module</td>
<td>8 safety digital inputs 24 VDC, sink</td>
<td>TM7SDM12DTFS</td>
<td>0.320/0.705</td>
</tr>
<tr>
<td>IP67 Safety mixed I/O module</td>
<td>4 safety digital outputs 24 VDC, transistor</td>
<td>TM7SDM12DTFS</td>
<td>0.320/0.705</td>
</tr>
</tbody>
</table>
SoSafe programmable programing software

Modicon TM5 and TM7 safety systems, Lexium 62 servo drives, and Lexium 62 ILM integrated drives are programmed and set up using SoSafe programmable. SoSafe programmable is used to create complex logical conditions using logical functions and safety functions, such as muting, timer, counters, Emergency stop, light curtain etc. via a graphic configuration interface.

The software editor is add-on software for SoMachine Motion.

- Programming possible with the combination of 3 languages:
  - Function Block Diagram (FBD)
  - The graphical language FBD is composed of functions and function blocks which are connected to each other or to variables using lines.
  - Ladder Diagram (LD); Code programmed in the LD graphic language is composed of contacts and coils.
  - Structured Text (ST); Code programmed in the ST text language consists of statements and expressions.
- Online monitoring and diagnostics of the I/O status
- Project comparison function to view changes between programs
- Configuration validation
- Hardware device scanner
- Printable schematics and documentation

The application program is downloaded from the PC to the Modicon TM5CSLC safety logic controller via an Ethernet connection. The application transferred to the TM5CSLC safety logic controller is saved on the memory stick.

Password

SoSafe programmable software is protected with two alphanumerical passwords for the application program (Development and Commissioning levels) and an additional level on the safety logic controller for hardware access protection. The project password prevents unauthorized changes being made to the project. The following hierarchical project levels are available:

- Development: enables all software functions
- Commissioning: enables modification of the device parameter settings
- Maintenance (no password): diagnostics and maintenance functions, NO modification allowed

LOG file

SoSafe programmable records the user’s actions in two event log files:

- The project event log records project-related user actions such as inserting, deleting or changing a POU. Error messages received from the TM5CSLC safety logic controller’s error stack are included in this error log file.
- The system event log records events that are not project-related, such as changes to the user manager.

Every event log entry contains the following information:

- Date and time of modification
- Type of modification
- Name of the logged-on user

System requirements

<table>
<thead>
<tr>
<th>Device</th>
<th>Value</th>
<th>Minimum</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC with Pentium processor</td>
<td></td>
<td>1 GHz x 86 architecture</td>
<td>2 GHz x 86 architecture</td>
</tr>
<tr>
<td>System RAM</td>
<td>Windows 7: 1 GB</td>
<td>Windows 8.1: 1 GB</td>
<td>Windows 7: 2 GB</td>
</tr>
<tr>
<td>Hard disk</td>
<td>500 MB free memory space</td>
<td>1 GB free memory space</td>
<td></td>
</tr>
<tr>
<td>CD-ROM drive</td>
<td>Required</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
References

PacDrive 3 automation solutions
Safety Modicon TM5 & TM7
Safety logic controllers and safety I/O modules

SoSafe programmable is available in DVD format, and in two languages: English and German. It runs on PCs with the following operating systems:
- Windows 7 Professional 32/64-bit
- Windows 8.1 Professional 32/64-bit
- Windows 10 Professional 32/64-bit

<table>
<thead>
<tr>
<th>Designation</th>
<th>Description</th>
<th>Reference</th>
<th>Weight (kg/lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SoSafe programmable</td>
<td>installation DVD, including Demo and Maintenance version</td>
<td>Somsaa3022</td>
<td>0.365/0.805</td>
</tr>
<tr>
<td>Single license</td>
<td></td>
<td>SomsaACZZSMZZ</td>
<td></td>
</tr>
<tr>
<td>Team license (10x)</td>
<td></td>
<td>SomsaACZZTMMZZ</td>
<td></td>
</tr>
<tr>
<td>Facility license (100x)</td>
<td></td>
<td>SomsaACZZEPMMZZ</td>
<td></td>
</tr>
</tbody>
</table>
### Functions

**PacDrive 3 automation solutions**  
**Safety Modicon TM5 & TM7**  
**Safety logic controllers and safety I/O modules**

<table>
<thead>
<tr>
<th>Function block</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SF_Antivalent</td>
<td>The safe SF_Antivalent function block monitors the signals of two safe input terminals for different signal states.</td>
</tr>
<tr>
<td>SF_EDM (External Device Monitoring)</td>
<td>The safe SF_EDM (External Device Monitoring) function block monitors the defined initial state and the switching behavior of contactors connected to the safety module.</td>
</tr>
<tr>
<td>SF_EmergencyStop</td>
<td>The safe SF_EmergencyStop function block monitors the switching states of an emergency-stop control device.</td>
</tr>
<tr>
<td>SF_EnableSwitch</td>
<td>The safe SF_EnableSwitch function block evaluates the signals of a manually-actuated three-stage enable switch (in accordance with EN 60204) in order to identify its switching stage and direction.</td>
</tr>
<tr>
<td>SF_Equivalent</td>
<td>The safe SF_Equivalent function block monitors the signals of two safe input terminals for the same signal states.</td>
</tr>
<tr>
<td>SF_ESPE safe</td>
<td>The SF_ESPE (Electro-Sensitive Protective Equipment) safe function block monitors the switching states of electro-sensitive protective equipment (e.g. light curtains).</td>
</tr>
<tr>
<td>SF_GuardLocking</td>
<td>The safe SF_GuardLocking function block supports the monitoring of a guard with guard locking (safety door monitoring with four-stage interlocking according to EN 1088).</td>
</tr>
<tr>
<td>SF_ModeSelector</td>
<td>The safe SF_ModeSelector function block evaluates the states of a mode selector switch with up to eight positions.</td>
</tr>
<tr>
<td>SF_MutingPar_2Sensor</td>
<td>The safe SF_MutingPar_2Sensor function block evaluates the signals of two muting sensors and one item of optoelectronic safety equipment (e.g. light curtain).</td>
</tr>
<tr>
<td>SF_MutingPar</td>
<td>The safe SF_MutingPar function block evaluates the signals of four muting sensors and one item of optoelectronic safety equipment (e.g. light curtain).</td>
</tr>
<tr>
<td>SF_MutingSeq</td>
<td>The safe SF_MutingSeq function block evaluates the signals of four muting sensors and one item of optoelectronic safety equipment (e.g. light curtains).</td>
</tr>
<tr>
<td>SF_OutControl</td>
<td>The safe SF_OutControl function block controls the output of a safe device. The safe output is controlled depending on a signal from the standard control (operation start/stop) and safe signal monitoring of a safe function (e.g., emergency-stop).</td>
</tr>
<tr>
<td>SF_SafetyRequest</td>
<td>The safe SF_SafetyRequest function block supports the function “Request a safety function” in an application (e.g. safe stop).</td>
</tr>
<tr>
<td>SF_TestableSafetySensor</td>
<td>The safe SF_TestableSafetySensor function block evaluates the status of connected optoelectronic safety equipment (e.g. light curtains).</td>
</tr>
<tr>
<td>SF_TwoHandControlTypeII</td>
<td>The safe SF_TwoHandControlTypeII function block evaluates the switching behavior of a type II two-hand control device connected to the safety module.</td>
</tr>
<tr>
<td>SF_TwoHandControlTypeIII</td>
<td>The safe SF_TwoHandControlTypeIII function block evaluates the switching behavior of a type III two-hand control device connected to the safety module.</td>
</tr>
<tr>
<td>SF_SafeMotionControl</td>
<td>The safe SF_SafeMotionControl function block manages activation of the safe functions connected to the drives. The following motion settings are available for Safe Torque Off (STO), Safe Stop 1 (SS1), Safe Stop 2 (SS2), Safe Operating Stop (SOS), Safe Maximum Speed (SMS), Safe Limited Speed (SLS), Safe Direction Indication (SDI).</td>
</tr>
<tr>
<td>SF_SE_EnableSwitch</td>
<td>The safe SF_SE_EnableSwitch function block evaluates the signals of a manually-actuated three-stage enable switch in accordance with EN 60204 in order to identify its switching stage and direction.</td>
</tr>
</tbody>
</table>
Presentation

PacDrive 3 automation solutions
Safety Modicon TM5 & TM7
Safety logic controllers and safety I/O modules

Recommended offers

Modicon TM5 Sercos interface module, for Sercos 3 automation bus

The Modicon TM5 interface module
> allows the connection of distributed I/O islands that are distributed over machines via the Sercos bus.
> is a combination of four products to be ordered separately:
  - electronic interface module
  - bus base
  - power distribution electronic module
  - removable terminal block

For more information, please refer to our catalog “Modicon TM5 Expansion modules” ref. DIA3ED2131204EN.

Power supply

Phaseo ABL8TE Switch mode power supply:

- Unregulated, filtered, rectified power supplies from 0.5 to 60 A
- Power supplies for 400 V 3-phase networks
- Output voltage: 24 V/240-1440 W
- Primary voltage adaptation +/- 20 V
- Use of rated power up to +55 °C without derating
- LED display of primary voltage presence

For more information, please refer to our catalog “Power supplies Phaseo ABL8 Single phase and 3-Phase power supplies 230 V to 400 V - 12 W to 1440 W”, ref. DIA3ED2170404EN.

Protection

Protection
AC line current DC bus current (with AC line choke)

TeSys U LUB12 + LUCA12BL 12 A ≤ 12.5 A
TeSys U LUB32 + LUCA18BL 18 A ≤ 19 A
TeSys U LUB32 + LUCA32BL 32 A ≤ 33.5 A

AC line contactor LC1D40ABD 40 A ≤ 42 A

Motor protection switch GY3P40

Note: Limit the 24 VDC supply of the power supply to 50 A with an appropriate method.

For more information, please visit our website www.schneider-electric.com

Preventa XPSMCM modular safety controller

Alternative offers are available for connection to the PacDrive 3 system, such as Preventa safety modules or Preventa modular safety controllers. These offer simple-to-use standalone safety configurations to manage safety around the machine.

The Preventa XPSMCM modular safety controller offer is a flexible system that can have 8 to 128 inputs and 2 to 16 outputs within the configuration. In addition, some key functions can monitor speed using SIN/COS encoders incorporated in the servo motor systems.

The Preventa modular safety controller is a modular configurable safety controller able to monitor multiple safety functions on and around a machine to minimize the possibility of people accessing the dangerous moving parts of the machine, and is designed for monitoring safety functions such as:
> Emergency Stop
> Guard Monitoring
> Perimeter Guarding
> Position Monitoring
> Speed Monitoring
> Enabling Movement

with input devices such as emergency stop pushbuttons, safety guards and limit switches, safety foot switches, safety light curtains and laser scanners, safety mats, safety encoders and proximity sensors, two-hand control stations and enabling switches.

For more information, please refer to our catalog “Preventa modular safety controller, type XPSMCM” ref. DIA3ED2140901EN.
## PacDrive 3 automation solutions

Safety Modicon TM5 & TM7
Safety logic controllers & Safety I/O modules
Product reference index

### S
- SOMSA3022 11
- SOMSAACZEPMZ2 11
- SOMSAACZSPMZ2 11
- SOMSAACZTPMZ2 11

### T
- TM5ACBM3FS 9
- TM5ACBM4FS 9
- TM5ACSLCM8FS 7
- TM5ACTB5EFS 9
- TM5ACTB5FFS 9
- TM5ACTB52FS 9
- TM5CSLC100FS 7
- TM5CSLC200FS 7
- TM5SA4AFS 9
- TM5SDC1FS 9
- TM5SDI2DFS 9
- TM5SDI4DFS 9
- TM5SDI20DFS 9
- TM5SDM4DTRFS 9
- TM5SDM8TBFS 9
- TM5SDO2DTRFS 9
- TM5SDO2TAFS 9
- TM5SDO2TFS 9
- TM5SDO4TAFS 9
- TM5SDO4TFS 9
- TM5SDO6TBFS 9
- TM5SPS10FS 9
- TM5STI4ATCFS 9
- TM7SDI8DFS 9
- TM7SDM12DTRFS 9
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